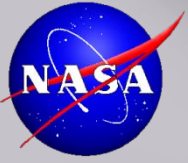


# AIRS DATA AND SERVICES AT THE GSFC EARTH SCIENCES DATA AND INFORMATION SERVICES CENTER (GES DISC)

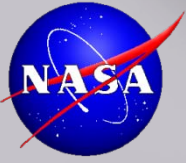
NASA Sounder Science Team Meeting  
November 3-5, 2010  
Greenbelt, MD

Bruce Vollmer  
Bruce.E.Vollmer@nasa.gov



# Outline

- ▣ Operation Summary
  - AIRS Data Holdings
  - AIRS Data Distribution Metrics
  
- ▣ AIRS Data Services
  - Ongoing Support
  - Recent Enhancements



# AIRS Data Holdings at GES DISC

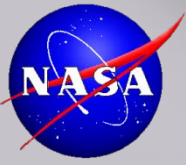
## ❖ Version 3

- 2002-2007 (static collection)
- L2, L3 only
- Infrequent, yet persistent access
- Planning to remove once V6 collection is available

## ❖ Version 5

- 2002-current (ongoing production)
- L1, L2, L3
- Planning to keep as V6 collection is available

Level	Volume (TB)	Granules
L0	38.0	367,189
L1 (v5)	44.9	4,473,185
L2 (v3)	15.6	1,414,033
L2 (v5)	28.6	4,431,164
L3 (v3)	0.1	2,325
L3 (v5)	1.0	14,769
Total	128.2	10,702,665



# 2010 Distribution Highlights

- ❖ 2000+ distinct network addresses

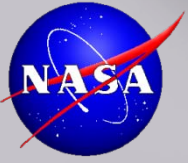
- ❖ 50+ top-level domains

- ❖ Changes over last year

- Volume decreased by 10%
- Less L1 data distributed
- Number of granules accessed grew by 70%
- Significantly more L2 data

Level	Volume (TB)	Granules
L1	138.0	7,646,722
L2	48.0	6,011,436
L3	10.8	125,618
NRT	13.4	410,835
Total	217.2	14,217,750

- Steady growth in NRT use



# Access Methods

## ❖ GES DISC provides a number of access methods

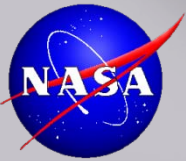
- FTP
- HTTP
- OpeNDAP
- WMS (selected parameters from NRT)
- Giovanni
  - L3 (including CO2)
  - AIRS Climatology
  - KMZ creation

## ❖ Mirador provides several HTTP services

- Interface to HDF hdp tool
  - SDS in binary or ASCII
- Subsetting
  - Parameter, Channel
- Format conversion to netCDF

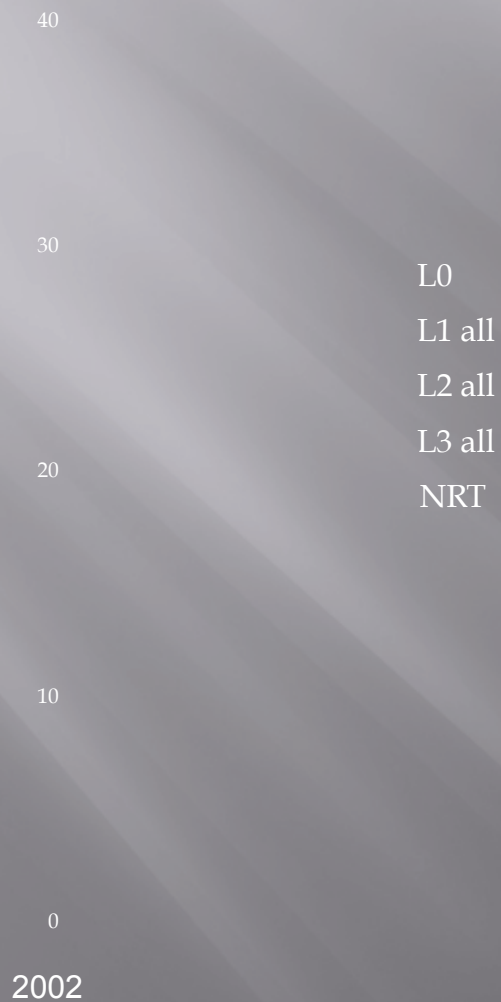
Method	Accesses
FTP	9,324,058
OPeNDAP	2,656,291
HDF_SDS_BIN	1,122,033
SUBSET_L1L2	621,238
HTTP	416,827
netCDF	44,040
WMS	39,461
Giovanni	3,898



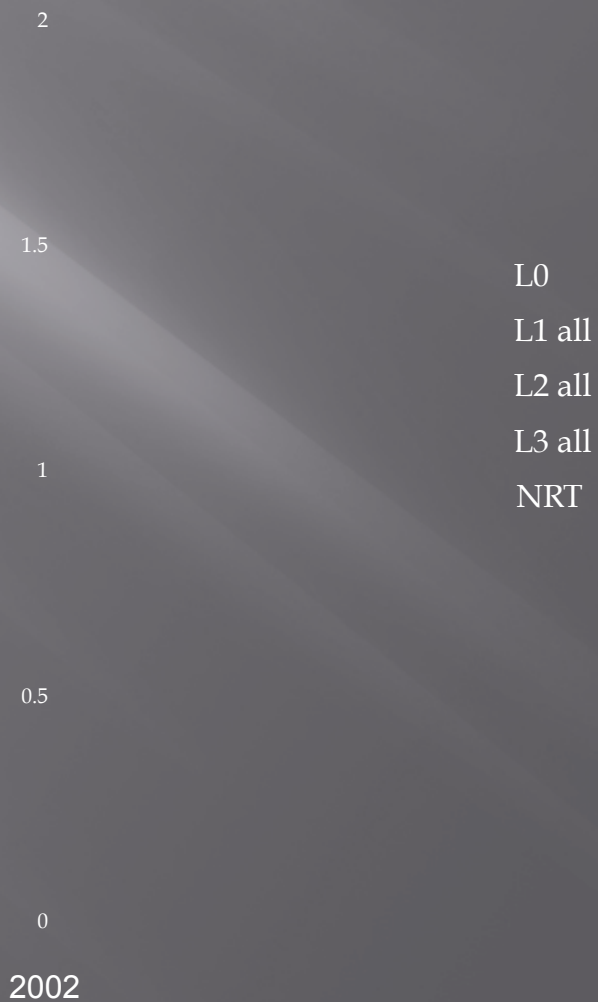


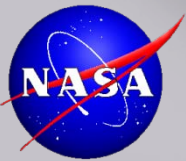
# Distribution Growth Since Start of Mission

Volume (TB) per Month



Granules (Millions) per Month





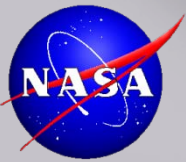
# Distribution by Version

Volume (TB) per Month



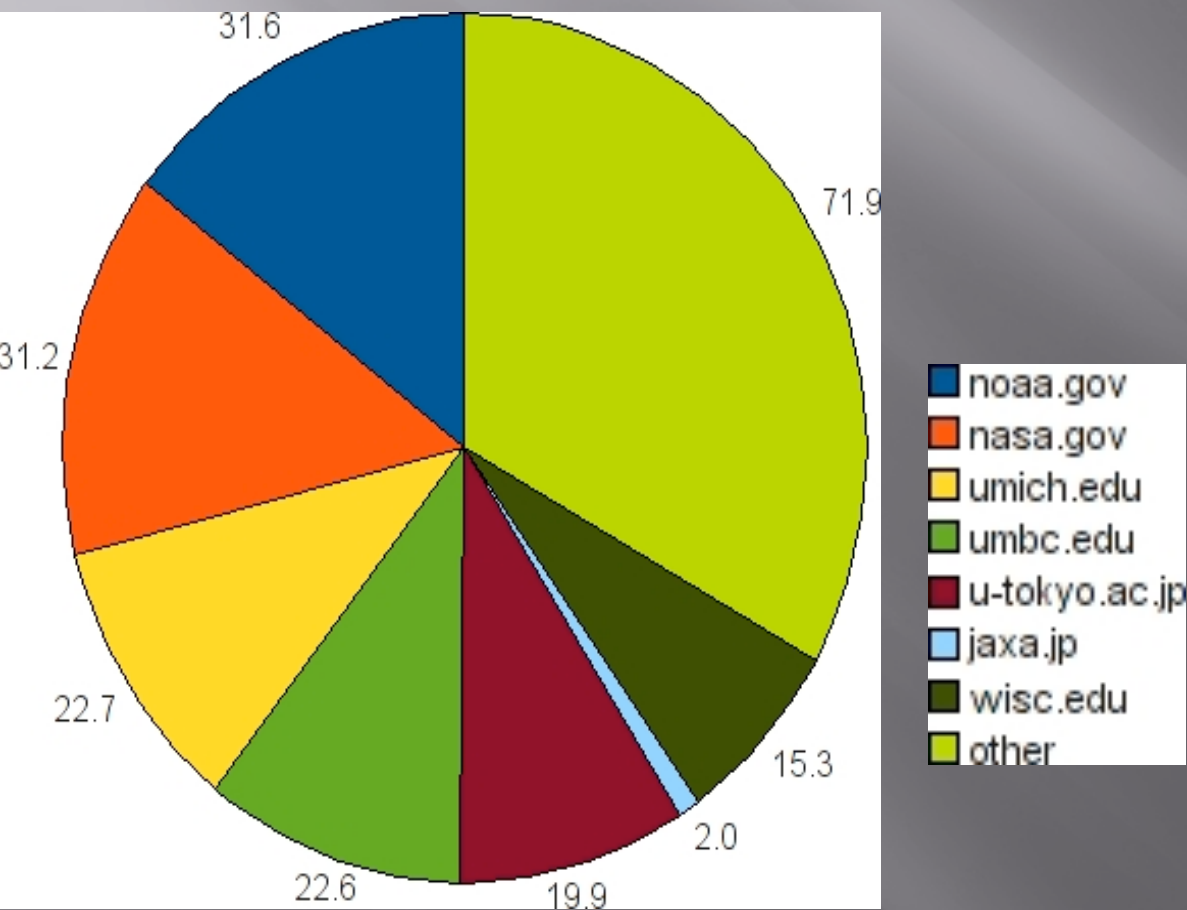
Granules (Millions) per Month



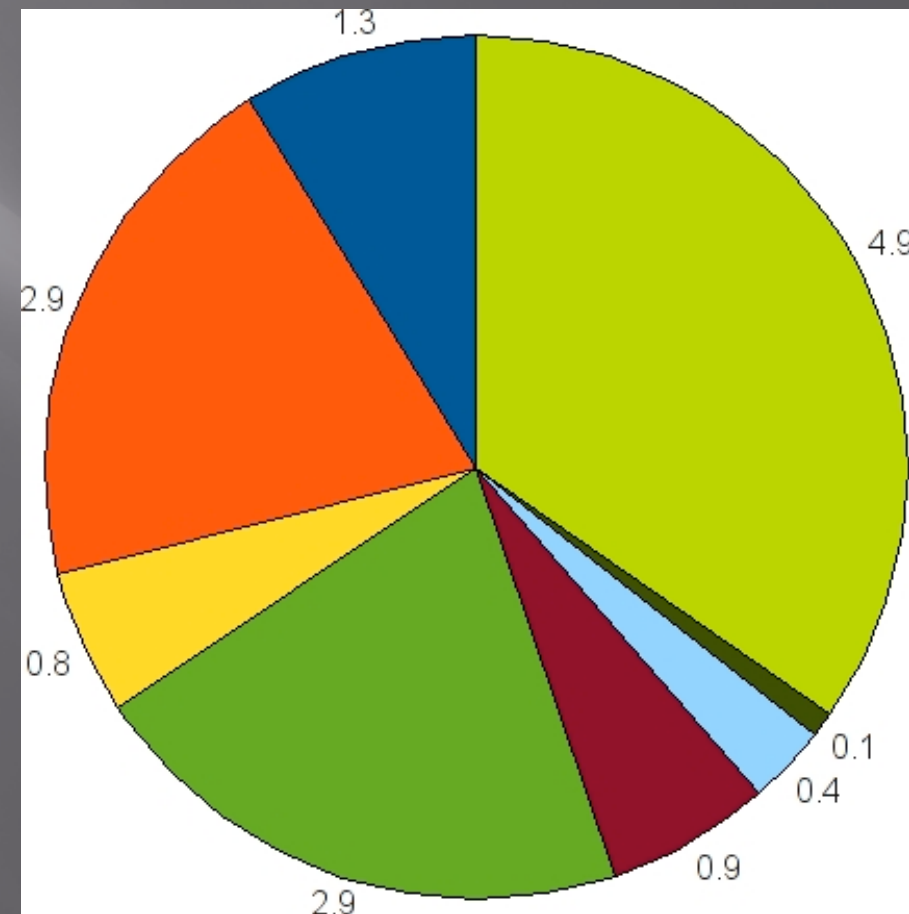


# Distribution by Domain

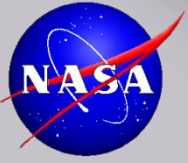
Volume (TB)



Granules (Millions)

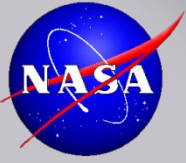






# AIRS Data Services

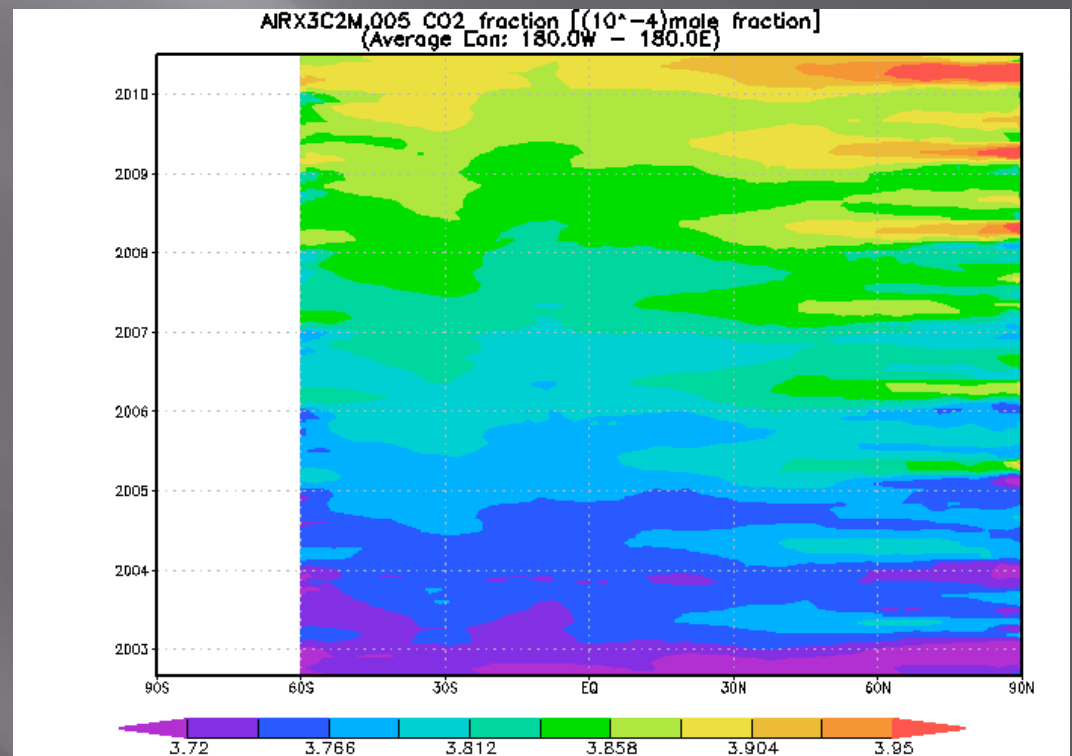
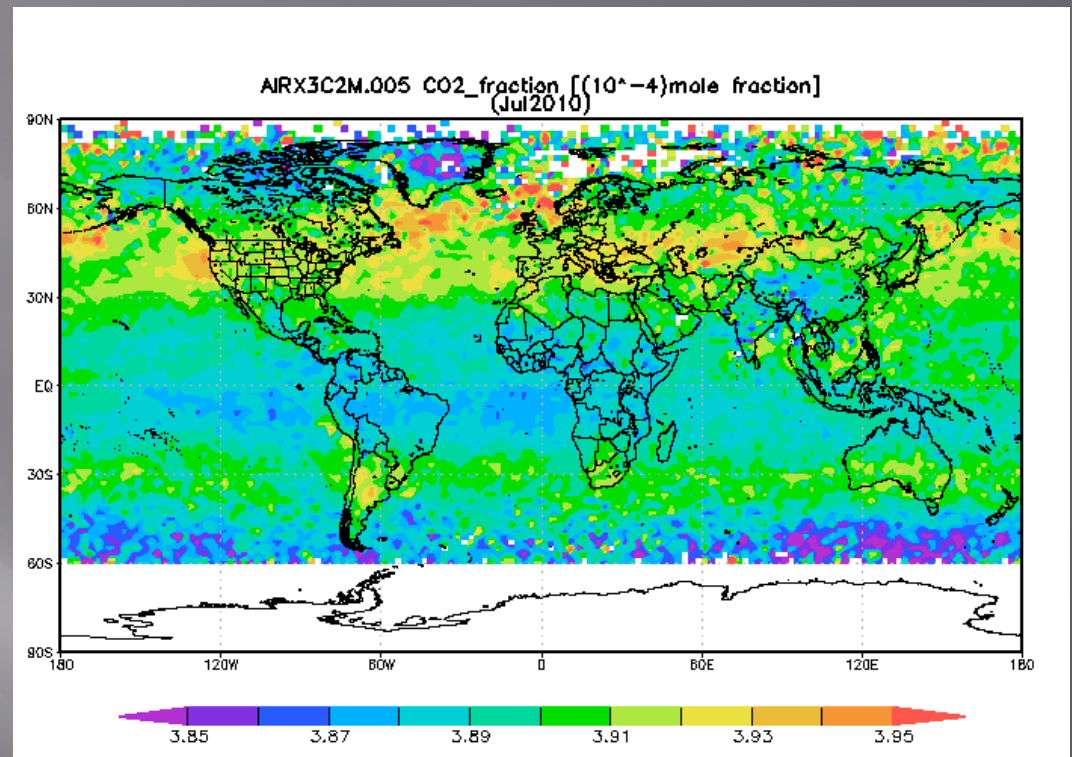
- ❖ Ongoing
  - Mirador Search Interface
  - L1B Channel subsetting
  - L2 parameter subsetting
  - Format conversion to netCDF (from HDF-EOS 2)
  - Giovanni (AIRS L3)
  
- ❖ Recent Enhancements
  - Preparation for V6
  - AIRS data in Giovanni
    - CO<sub>2</sub>
    - YOTC level 2 profiles
    - AIRS climatologies
  - OpenDAP for AIRS
  - Near Real Time Data
  
- ❖ New Services

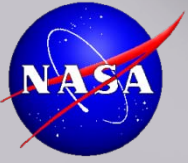


# AIRS data in Giovanni

\* Monthly CO<sub>2</sub>

AIRS CO<sub>2</sub> Observations are available in Giovanni for various types of plots including spatial maps and Hovmoller plots.

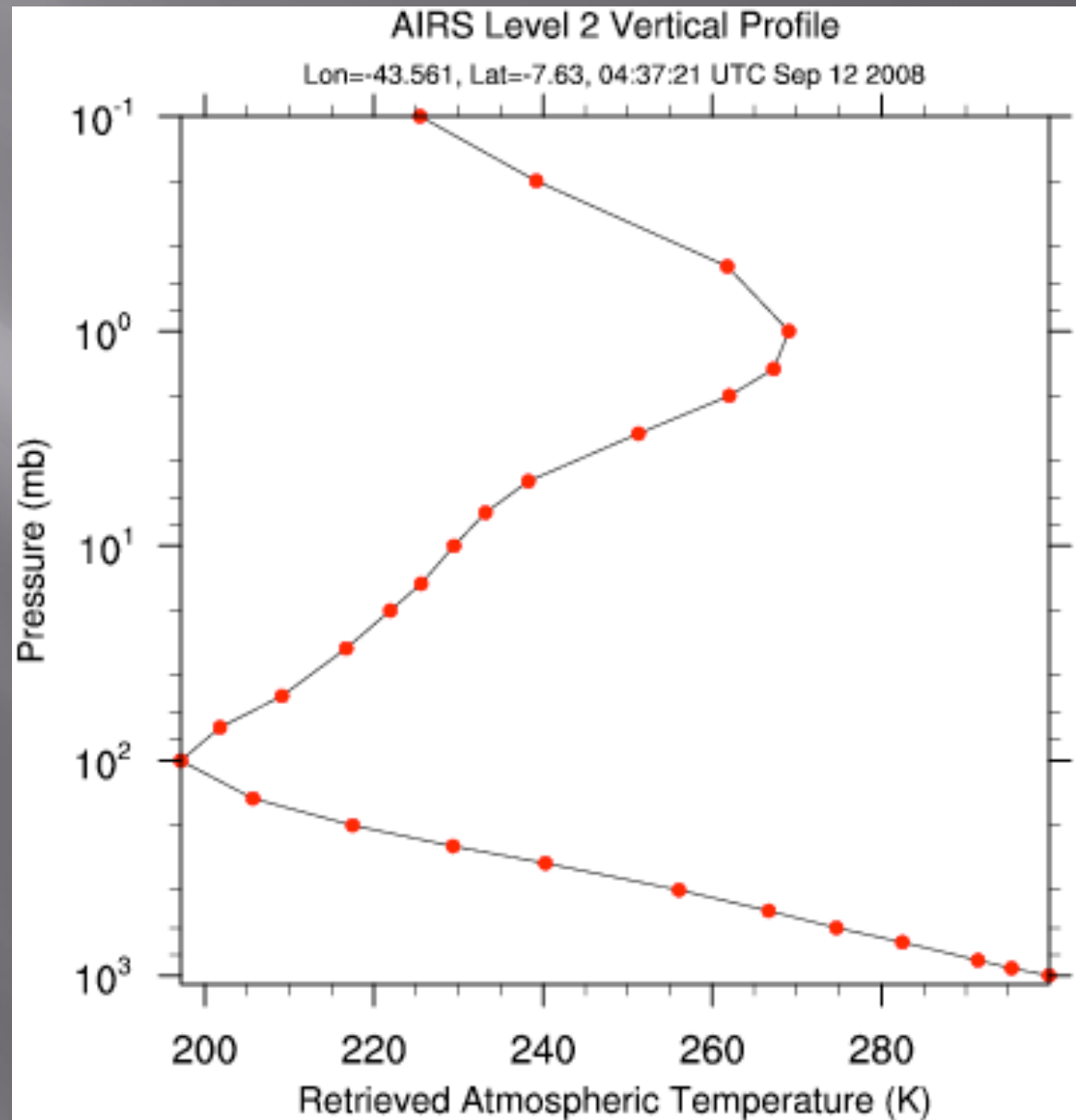


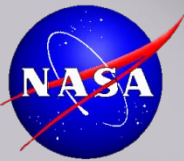


## AIRS data in Giovanni

\* YOTC level 2 profiles

The YOTC portal (<http://disc.sci.gsfc.nasa.gov/YOTC>) uses Giovanni to display AIRS Level 2 profile data.

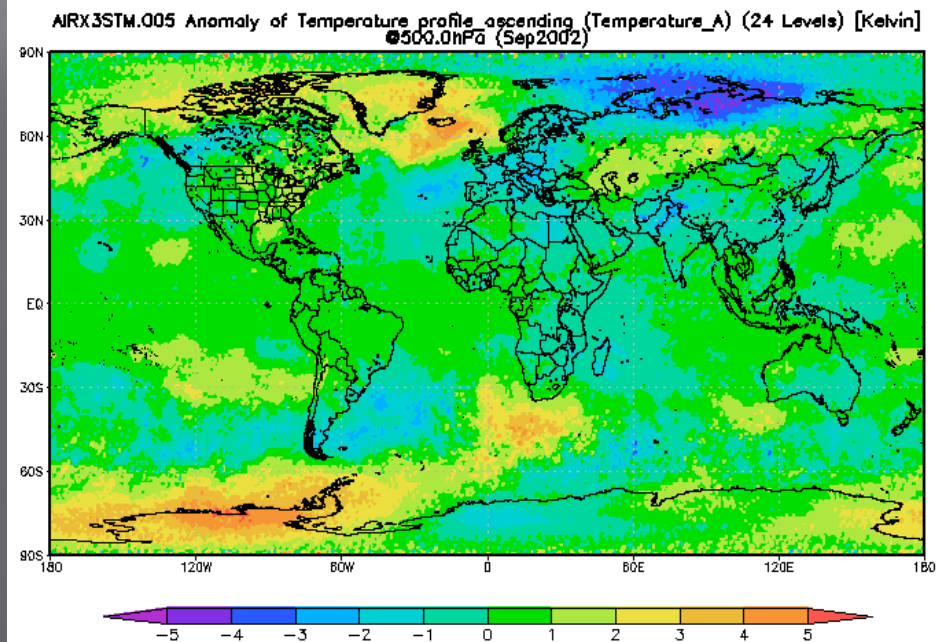
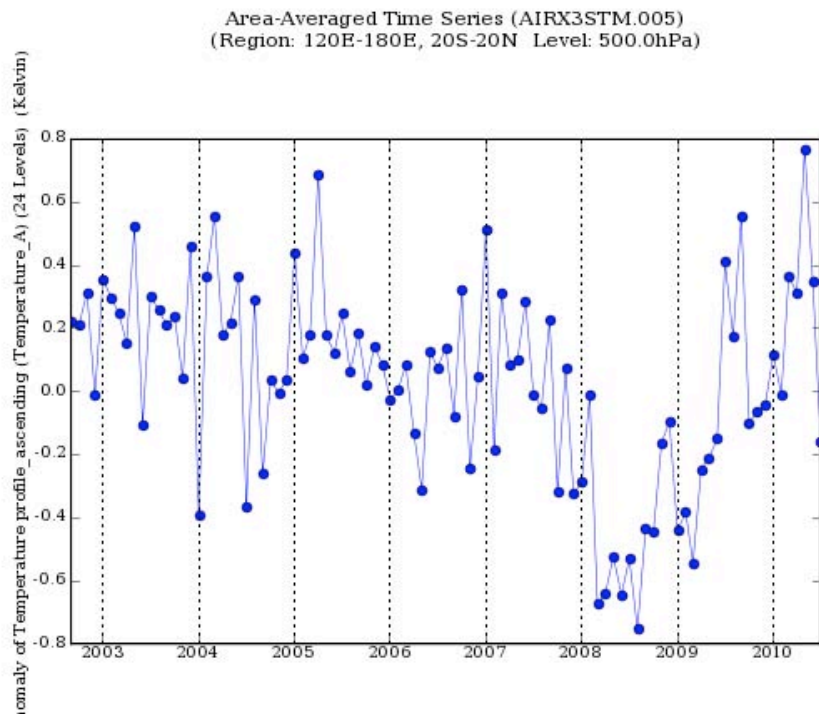
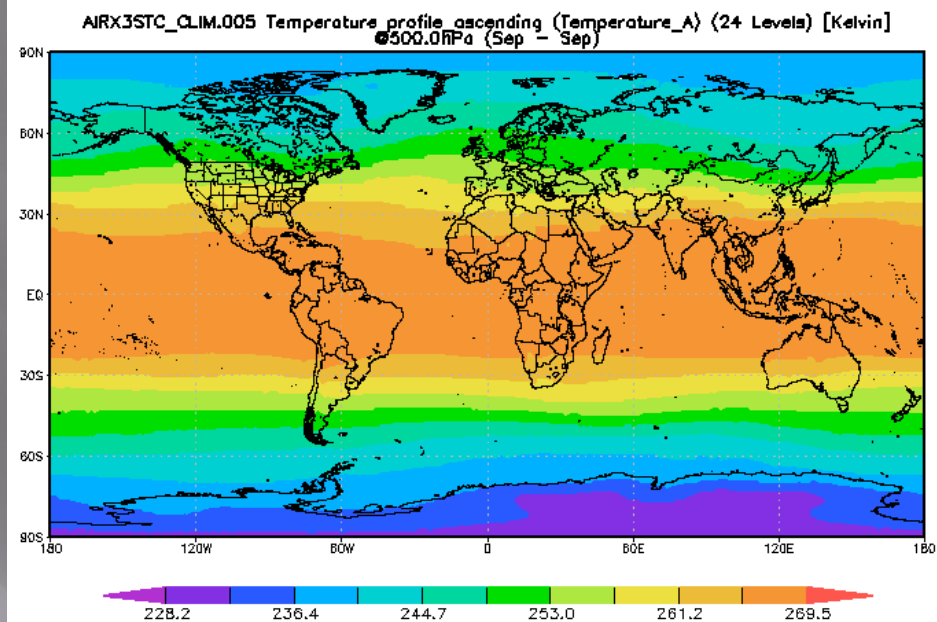




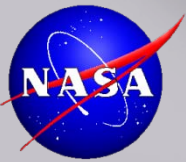
# AIRS data in Giovanni

- \* AIRS climatologies

The AIRS climatologies in the Monthly instance allow users to calculate maps and time series of anomalies. The time series shown below is the 500 mbar temperature in Tropical Western Pacific.







# Enhanced OPeNDAP Service

OPeNDAP (Open-source Project for a Network Data Access Protocol) enables user tools to open and visualize a greater variety of data, particularly including HDF-EOS Level-1, Level-2, and Level-3 data.

Compatible tools include Panoply, IDV, Ferret, GRADS, IDL, MATLAB, NCL and McIDAS-V

L1 data

<http://airscal1u.ecs.nasa.gov/opendap>

<http://airscal2u.ecs.nasa.gov/opendap>

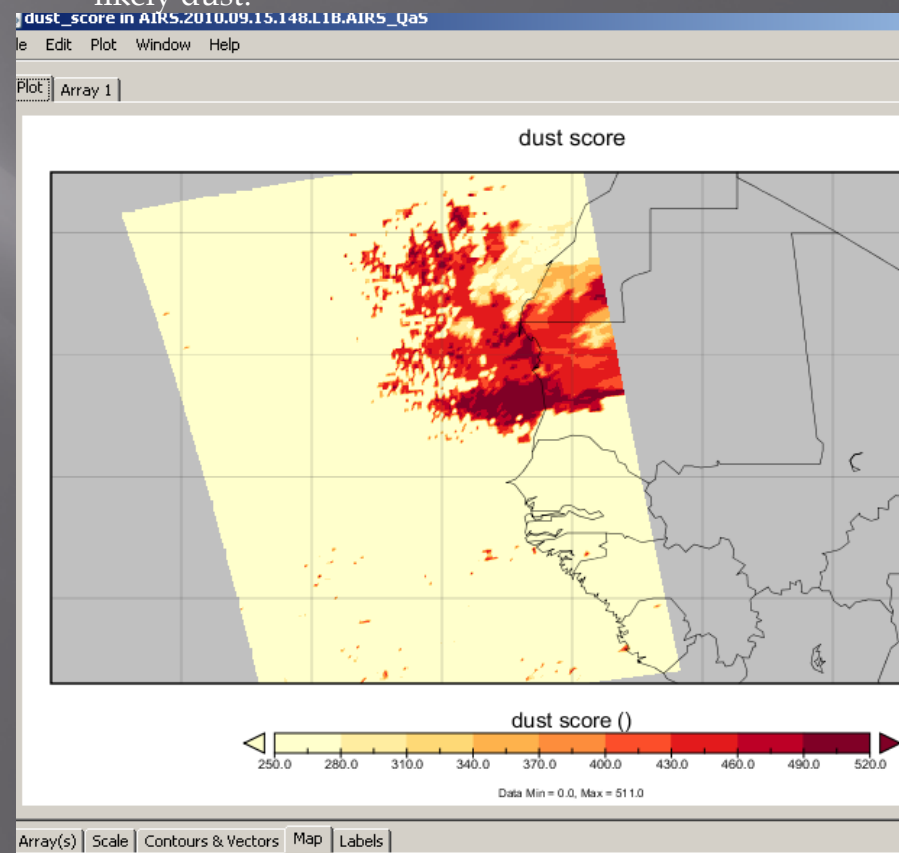
L2 data

<http://airspar1u.ecs.nasa.gov/opendap>

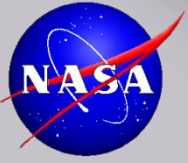
L3 data

<http://acdisc.gsfc.nasa.gov/opendap>

The dust storm from 9/15/2010. Panoply plot of the AIRS Dust Score (AIRIBQAP). Values above 360 are likely dust.







# AIRS Near-Real-Time Data

<http://disc.gsfc.nasa.gov/nrt>

L1 and L2 data available within 2-3 hours of observation

IMAPP software recently integrated to provide select L1B channels in BUFR format

AIRS NRT images served through WMS

Available images include:

- Visible radiances
- Brightness Temperature difference for SO<sub>2</sub>
- CO<sub>2</sub>
- CO
- Dust Flag

Now a part of LANCE (<http://lance.nasa.gov>)  
LANCE UWG to meet mid-November 2010  
New NRT products and applications welcome!

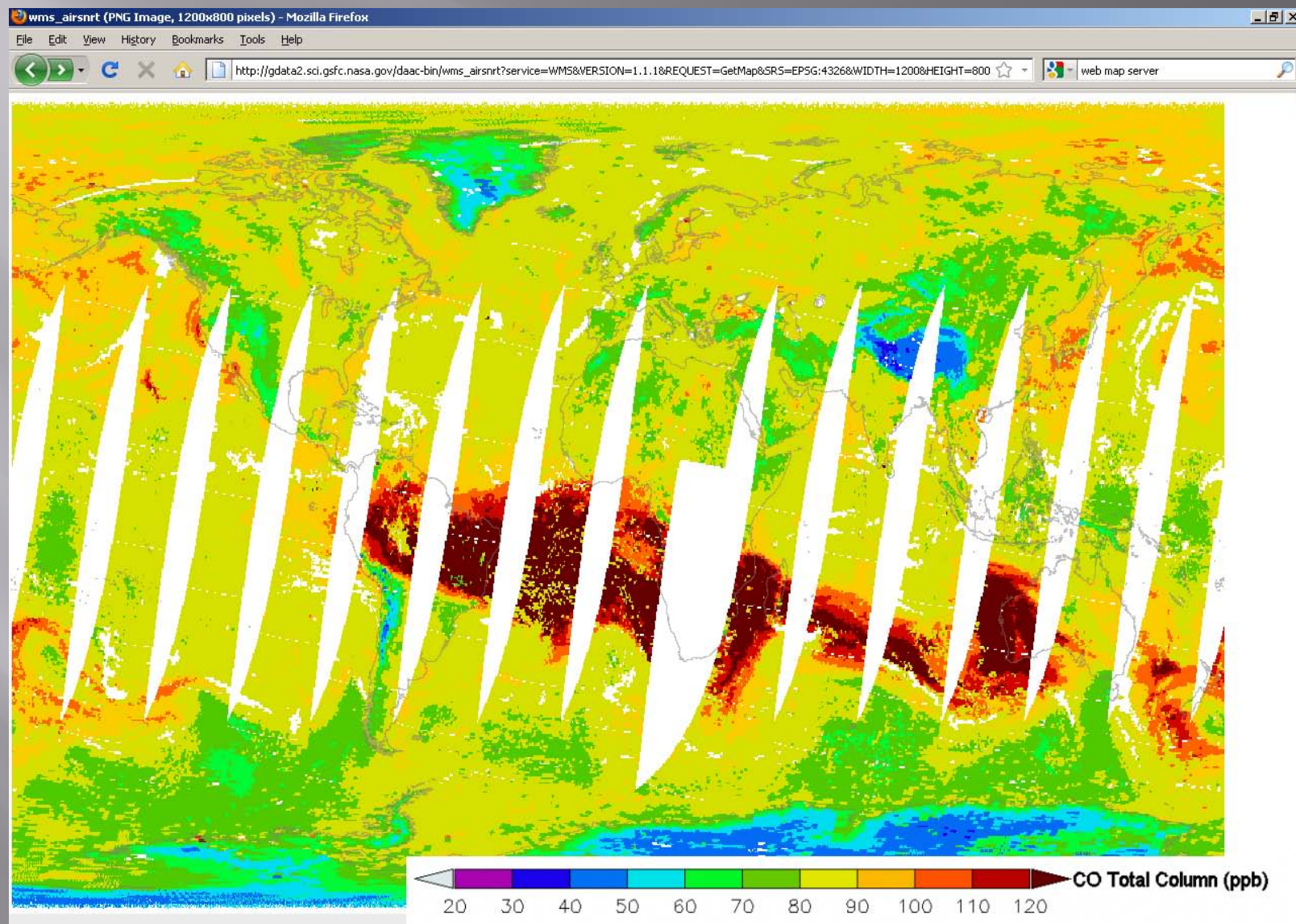
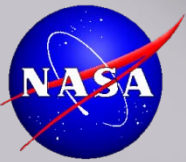
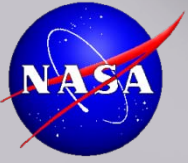


Image of AIRS Carbon Monoxide (CO) retrieval at night, served in near-real time by WMS on October 6, 2010.



# New Services

## Pomegranate

- Supports “webification” of science data files
- Makes science data files and their inner components Web addressable and accessible
- May be used as a command line tool or as a web service

## Data Quality Screening Service